

HOME ASSIGNMENT (2024 Batch)
M.A./M.SC. IN MATHEMATICS
(THIRD SEMESTER)
CENTRE FOR DISTANCE AND ONLINE EDUCATION
DIBRUGARH UNIVERSITY

(Full Marks 20 for each course)

(ALL THE QUESTIONS GIVEN BELOW ARE COMPULSORY)

Course : MATH – 301 (Topology)

Assignment – 1

Marks – 5+5=10

- Q.1. (i) For a subset A of a topological space, show that $\bar{A} = A \cup A'$
(ii) Show that in a co-finite topology every finite set is closed.

Assignment – 2

Marks – 5+5=10

- Q.2. (i) Define compact set. Show that continuous image of a compact space is compact.
(ii) Show that no countable subset of R is connected.

Course : MATH – 302 (Measure theory)

Assignment – 1

Marks – 5+5=10

- Q.1. (i) Justify that every countable set has measure zero.
(ii) Establish the Frechet theorem.

Assignment – 2

Marks – 5+5=10

- Q.2. (i) State and prove Fatou's Lemma.
(ii) Show that an increasing function is a Borel function.

Course : MATH – 303 (Advanced Fluid Dynamics)

Assignment – 1

Marks – 10

- Q.1. Establish the relation between stress and rate of strain components.

Assignment – 2

Marks – 10

- Q.2. Discuss the flow due to an oscillating plate.

Course : MATH – 304 (Numerical Analysis)

Assignment – 1

Marks – 10

- Q.1. Write short notes on Secant method. Find a real root of $x^2 - 12 = 0$ by using Secant method.

Assignment – 2

Marks – 5+5=10

- Q.2. Explain briefly on
(a) Normal equations
(b) Chebychev polynomials